

REMARKS

The Applicants appreciate the Examiner's quick and courteous Office Action. Claims 1-18 were rejected. Claim 9 has been amended to include the language of original claim 11, and thus no new matter has been added. Original claim 11 has been canceled as redundant. Claims 1-10 and 12-18 remain present in the application.

The Applicants greatly appreciate the Examiner's indication that claims 5, 8 and 15 are not rejected over the prior art of record.

Double Patenting Rejection

The Examiner has rejected claims 1-8 on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-4 and 10-12 of U.S. Patent No. 6955763. Although the conflicting claims are not identical, the Examiner contends that they are not patentably distinct from each other because the instantly recited controller for regulating the height is specifically recited in claim 3 of US 6955763 as level transmitter and a level control valve. As the instant claims are alleged to be fully encompassed by the claim language of US 6955763 the instant claims are properly rejected as "anticipated" thereby.

The Examiner has rejected claims 9-18 on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 5-9 and 13-15 of U.S. Patent No. 6955763 in view of either one of Cairo (US 4564457) or Canzoneri (US 4782789). The claims of US 6955763 recite all the instantly recited limitations save for the "intermittently raising the liquid level etc." {step e) of claim 9}. This feature is alleged to be known in the oil flotation industry and taught by either of Cairo '457 [see col. 5, lines 25+] or Canzoneri '789 [col. 6, lines 16+].

The Applicants appreciate the Examiner noting that a timely filed terminal disclaimer will overcome the subject nonstatutory obviousness-type double patenting rejections.

The Applicants respectfully disagree with the Examiner's Rejection. However, in the interest of expediting allowance, the Examiner's attention is respectfully directed to the timely filed terminal disclaimer that accompanies this amendment. The Applicants thus respectfully submit that the subject nonstatutory obviousness-type double patenting rejection is thus overcome. In the event the Examiner reconsiders and withdraws the double patenting rejections, the Examiner is requested not to enter the terminal disclaimer. Reconsideration is respectfully requested.

35 U.S.C. §102(b) Rejection

The Examiner has rejected claims 1-4 and 9-14 under 35 U.S.C. §102(b) as allegedly being anticipated by either one of Cairo (US 4564457) or Canzoneri (US 4782789). The Examiner finds that Cairo '457 discloses a multiple chamber flotation tank having partitions 19, 21, 23 etc. dividing the tank into the recited chambers. The Examiner notes that there are at least two chambers/cells that include a mechanism 35 for ingesting and mixing gas and a skim trough 70 that extends partially along the top of the partitions. The Examiner asserts that the liquid density controls 74 and 75 are in fact level controls based on the density of the accumulated material. The Examiner contends that any wave action or pitching/rolling will cause the liquid in the tank to "slosh" and will be measured on the liquid level controls 74 and 75. The Examiner alleges that partitions (19, 21, etc.) will act to dampen the motion of the liquid if subjected to movement of the entire tank.

The Examiner does not mention any part of Canzoneri '789 in this rejection.

The Applicants respectfully traverse. A patent claim is anticipated, and therefore invalid, only when a single prior art reference discloses each and every limitation of the claim. *Glaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1047, 34 U.S.P.Q.2d 1565 (Fed. Cir.), cert. denied, 116 S.Ct. 516 (1995). As will be established, neither reference discloses each and every limitation of the claim.

The Applicants would respectfully direct the Examiner's attention to the fact that claim 1 as originally filed recites "(g) a controller for regulating the height of the liquid level *in response to the movement of the vessel*". (Similarly, claim 6 as originally filed, not subject to the instant rejection, recites "(k) a control mechanism for controlling height of the liquid level *in response to the movement of the vessel*".) The Examiner's attention is further respectfully directed to the amendment to method claim 9 where element e) has been amended to recite "intermittently raising the liquid level and collecting suspended matter in the primary skim collection channel in response to the movement of the vessel". The Applicants respectfully note that support for this addition is found in dependent claim 11 as originally filed, and is thus not an improper insertion of new matter.

Cairo '457 relates to an upflow eductor induced air separator having a plurality of aeration chambers. The level in the main separator tank **12** is controlled by density probes **74** and **75**. The portion of column 5 of Cairo '457 at lines 13-38 to which the Examiner refers is as follows:

However, as the froth which is the oil and solid laden contaminants tend to build up in space **54**, there is further provided a density probe **74** extruding into the interior upper portion of tank **12**, density probe **74** monitoring the difference in the densities of water and oil/solids laden froth and *at a particular point in the accumulation*, density probe **74** would activate valve **60**, partially closing valve **60** and reducing the outlet flow of the effluent from tank **12**. This reduction of outlet flow from tank **12** would then *cause an accumulation of level within tank 12*, as seen in FIG. 2B as indicated by arrows **78**, and would tend to raise the fluid level up to point **80** at the top portion of trough **70**, thereby concentrating the froth contaminants within trough **70**. At this point, line **62** which is the exit line of trough **70** is provided with skim outlet valve **82** which is then opened, siphoning off all accumulation within trough **70**, which is the oil and solid contaminant laden froth contained in the trough. The removal of oil laden skim in this manner eliminates the need of an external pump to evacuate the contaminants. Once this siphoning has taken place, *outlet valve 82 is closed via activation by a second density probe 75, monitoring the drop in density present*. The contaminants are then collected in tanks downstream of tank **12** for unrelated handling. (Emphasis added.)

The Applicants respectfully submit that there is no teaching or suggestion in this portion of Cairo '457, or in any part of Cairo '457, that the density probes **74** and

75 therein regulate the level within the tank in response to the movement of tank **12**, which is required by the claims herein. Instead, as the excerpt indicates, “density probe **74** would activate valve **60**, partially closing valve **60** and reducing the outlet flow of the effluent from tank **12**” “*at a particular point in the accumulation*”. What this point is, is not specified, and the Applicants respectfully submit that such point may *not* be *assumed* to be the movement of the vessel or tank **12**. Cairo ‘457 is silent on this point. Silence in the references is not a proper substitute for a disclosure of facts adequate enough to support a conclusion of obviousness, *In re Burt*, 148 U.S.P.Q. 548, 553 (C.C.P.A. 1966). The Applicants respectfully submit that silence is also not a proper substitute for a disclosure of facts adequate enough to support a conclusion of anticipation.

The Applicants respectfully submit that the claimed invention having a controller for regulating the height of the liquid level *in response to the movement of the vessel*, includes, but is not necessarily limited to, the pitch and roll of the vessel **12** of the instant invention. The Examiner’s attention is respectfully directed to page 5, lines 25-28 of the application as filed: “The liquid level may be lowered during times of pitching and rolling of the vessel (caused by pitching and rolling of a floating offshore hydrocarbon recovery platform upon which the vessel is installed) and then raised for collecting suspended matter.” The Examiner’s attention is additionally respectfully directed to the application as filed page 9, line 24+, particularly page 9, line 24 to page 10, line 4:

An important feature of the invention is intermittent skimming by raising the skim level (*e.g.* froth levels or fluid levels **50**, **76** and/or **66**) in order to remove the suspended matter or skim oil for *high pitch and roll conditions on a floating production platform*. It will be appreciated that on a floating offshore hydrocarbon recovery platform (or any other environment subject to excessive motion) it is possible for excessive wave action, such as during storms, hurricanes and other conditions that the platform may pitch and/or roll excessively. By “excessively” is meant to the detriment of the present method of clarifying water. That is, during consequent *pitching and/or rolling of system 10*, some clarified water would be undesirably collected by primary skim channel **40**, secondary skim collection channel **64**, and/or tertiary skim collection channel **70**, caused by froth levels or fluid levels **50**, **66** and/or **76**

splashing over or sloshing over excessively into these channels.
(Emphasis added.)

As noted, in the first sentence of the above excerpt, the froth or fluid levels **50**, **76** and/or **66** would normally be low and would be raised to skim the froth during times when the vessel **12** is stable or quiescent. The situation is reversed in the case of the references where the default position of the liquid is at the skim trough, putting the clarified water in danger of spilling into the trough with pitching and/or rolling.

It will be appreciated that the instant claimed invention is not limited to floating production platforms, but may be successfully employed in other environments where vessel **12** may move in directions such as pitch and roll, for instance a drill ship. Applicants respectfully submit that Cairo '457 does not contemplate or expect such environments, and that consequently, the Cairo '457 upflow eductor induced air separator would unintentionally, but detrimentally splash or slosh clarified water into the trough **70** thereof. In Cairo '457, the level apparently responds to the height of the froth as measured by the density probes **74** and **75**, *not* in response to the movement of the vessel.

Specifically with respect to Cairo '457, the Examiner contends that any wave action or pitching/rolling will cause the liquid in the Cairo '457 tank to "slosh" and will be measured on the liquid level controls **74** and **75**. The Applicants respectfully submit that in fact the liquid in the Cairo '457 tank *will* "slosh", and will "slosh" into trough **70** before density probes **74** and **75** can react to lower the liquid level before clarified water "sloshes" into trough **70**. As noted, Cairo '457 only discloses that density probes **74** and **75** change the liquid level "at a particular point in the accumulation", which cannot be fairly understood to be in response to the movement of the vessel, as required by all of the present claims.

With respect to Canzoneri '789, the Applicants assume that the Examiner finds column 6, lines 16-38 to be the relevant portions:

A liquid level control means in the form of a displacement level controller **32** is positioned in the inlet chamber **18** since this chamber has little, if any, turbulence and is inactive, which ensures a more stable control

and permits a more accurate pre-determination of the liquid level within the vessel **12**. *Normally*, the liquid level controller **32** controls level so that *only froth passes over the edge of the trough 70 by controlling an outlet valve 61*. An *adjustable timer 82* connected to a three-way valve **83** transfers control from the level controller **32** to a regulated source of gas **84** which closes the outlet valve **61** through actuator **85** to a pre-determined position while not interrupting the effluent flow. This raises the liquid level in the vessel **12** so that all surface froth and a small amount of liquid is skimmed.

An alternate liquid level control means can be a second level controller **86** mounted in lieu of the regulated gas supply. This second level controller **86** can be *set at a level slightly above the edge of the skim trough 70*. An adjustable *automatic timer 82* is operationally connected to the displacement level controller **32** and level controller **86** which permits skimming of froth *intermittently at a predetermined adjustable rate*. (Emphasis added.)

Even though Canzoneri '789 states that water is often used to aid in the production of oil and gas on offshore platforms (column 1, lines 15-17), the Canzoneri '789 device would be a particularly unsuitable flotation cell to use on a floating offshore hydrocarbon recovery platform or a drill ship. As noted in the excerpt above, the liquid level controller **32** normally controls level so that only froth passes over the edge of the trough **70**, and the second level controller **86** is set so that the level is slightly above the edge of the skim trough **70**. Thus, the normal position of the liquid levels in the Canzoneri '789 method and apparatus is at the trough. A sudden or quick movement (pitch, roll, etc.) of the Canzoneri '789 will send water into the skim trough **70** because the liquid level is right at that point and the height of the liquid level is *not* controlled in response to the movement of the vessel as required by the present claims. Instead, in the Canzoneri '789 cell, the liquid level is taught to be on a timer **82**, and is thus the liquid level therein is responsive to a timer, *not* to the movement of the vessel.

The Applicants thus additionally submit that each of Cairo '457 or Canzoneri '789 does not disclose each and every limitation of the present claims as amended, and that thus the instant rejection must be withdrawn. Reconsideration is respectfully requested.

35 U.S.C. §103(a) Rejection over Canzoneri '789 in View of Blaz '246

The Examiner has rejected claims 6-7 and 17-18 under 35 U.S.C. §103(a) as allegedly being unpatentable over Canzoneri '789 in view of Blazejczak (US 4990246 – hereafter called Blaz '246). The Examiner admits that Canzoneri '789 fails to disclose an independent skim collection channel in the inlet channel as recited in claims 6 and 17. The Examiner finds that Blaz '246 discloses such a feature (fig. 7-8). This helps reduce non-emulsified oil which can be easily removed from water by a simple gravity separation step. The Examiner contends that it would have been obvious to one of ordinary skill in the art to add such a desirable feature to Canzoneri '789.

The Applicants must respectfully traverse. To support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker*, 977 F.2d 1443, 1445; 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992).

As established above, Canzoneri '789 does not teach or suggest the claimed invention at all because it does not and cannot teach or suggest “(g) a controller for regulating the height of the liquid level *in response to the movement of the vessel*”, to use the language from claim 1. Instead, Canzoneri '789 only teaches and discloses that the liquid level in his cell is on a timer **82**. Further, the default position of the liquid level therein is near the trough. Thus, if the position of the cell is stable, moving the level in response to a timer **82** is suitable. However, if the cell were mounted on a floating offshore hydrocarbon recovery platform or a drill ship, the clarified water would be in constant danger of spilling over or sloshing over into the skim trough **70**. The timer **82** would never and could never be synchronized with the movement of the cell subjected to the sea beginning to move, *e.g.* pitch and roll.

The Applicant respectfully submits that Blaz '246 does not supply the deficiency of Canzoneri '789. Blaz '246 relates to a separator for two non-miscible liquids. Although Blaz '246 at column 1, lines 13-17 briefly mentions that their invention may be used to treat petroleum deposit waters in crude petroleum

production areas on offshore platforms, there is nothing else in Blaz '246 that suggests or hints that their separator is particularly adapted for use on a floating platform or drill ship that may be subjected to sudden and/or quick and/or surging movement, *e.g.* the pitch and/or roll of the open ocean. That is, Blaz '246 does not suggest or hint to one having ordinary skill in the art that Canzoneri '789 could or should be modified or changed so that the liquid levels therein are not set to a timer **82**, but instead should be adapted to be responsive to the movement of the vessel. The Applicants thus respectfully submit that because the supposed combination of Canzoneri '789 with Blaz '246 does not and cannot teach or suggest the claimed invention, a *prima facie* rejection of obviousness has not been made. Reconsideration is respectfully requested.

35 U.S.C. §103(a) Rejection over Cairo '457 in Further View of Blaz '246 and Canzoneri '789

The Examiner has rejected claims 6-7 and 17-18 under 35 U.S.C. §103(a) as allegedly being unpatentable over Cairo '457 further in view of Blazejczak '246 and Canzoneri '789. The Examiner admits that Cairo '457 fails to disclose an independent skim channel in the inlet chamber and the discharge chamber. Blaz '246 is seen by the Examiner to disclose such a feature (fig. 7-8). This helps reduce non-emulsified oil which can be easily removed from water by a simple gravity separation step. The Examiner further finds that Canzoneri '789 teaches the use of a discharge chamber skimmer (fig. 1, skimmer 74 therein). The Examiner contends that it would have been obvious to one of ordinary skill in the art to add such a desirable feature to Cairo '457.

The Applicants must again respectfully traverse. To support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker, id.*

The Applicants respectfully submit that neither Blaz '246 nor Canzoneri '789 may be properly understood to supply the deficiency of Cairo '457 as estab-

lished above. All of the claims require that the apparatus or the method have a controller or a control mechanism that controls the height of the liquid level *in response to the movement of the vessel* (e.g. pitch and/or roll, or *any* movement, for that matter). As previously noted, Cairo '457 relates to an upflow gas eductor induced air floatation separator that has the liquid level in a default fixed position. Such a default fixed position sets up the upflow gas eductor induced air floatation separator to fail, *i.e.* to spill over or slosh over water into the trough in the event of a sudden and/or quick movement of the upflow gas eductor induced air floatation separator if it were mounted on a floating offshore hydrocarbon recovery platform or a drill ship. The fact that the liquid level there is responsive to the density probes **74** and **75** does not cure this problem. The Applicants respectfully submit that the density probes would not be able to lower the liquid level fast enough to prevent some clarified water from sloshing over into trough **70**. The responsiveness of the liquid level to the density probes **74** and **75** does periodically skim the oil and solid laden froth into the trough **70**, but does not avoid or cure or overcome the problem of the water being spilled or tipped into trough **70** quickly or suddenly. The Cairo '457 separator apparently raises and lowers the froth level in response to the difference in densities of water and oil/solids, at some particular, unspecified point in the accumulation, not in response to the movement of the tank **12** therein.

As also established above, Canzoneri '789 adjusts their liquid level only in response to a timer, thus, Canzoneri '789 cannot cure or fix the problem of Cairo '457 even if it were combined therewith. The Blaz '246 separator is also not adjustable or responsive to the motion of the vessel, *e.g.* from the wave action of the open sea causing pitching and/or rolling suddenly and/or quickly. Blaz '246 has a level controller **36** in FIG. 1, please also see column 5, lines 39-42 and column 6, lines 20-23, but this level controller **36** is not in response to the movement of the cylindrical casing **1**. Column 6, lines 26-53 has more information about how the levels of Blaz '246 work, but they are still not in response to the movement of the vessel as required by the claims.

Thus, the Applicants respectfully submit that the rejected claims herein are not obvious from the combination of the references, and that a *prima facie* obviousness rejection has not been made. Reconsideration is respectfully requested.

35 U.S.C. §103(a) Rejection over Cairo '457 or Canzoneri '789 in view of Brown '203

The Examiner has rejected claim 16 under 35 U.S.C. §103(a) as allegedly being unpatentable over either one of Cairo '457 or Canzoneri '789 as applied to claim 9 above, and further in view of Brown 2766203. Brown '203 is seen by the Examiner to disclose a multiple chamber/cell flotation device for the purification of an oil contaminated water allegedly similar to applicant's invention and to that of Cairo '457 and Canzoneri '789. In Brown '203 the residence time is noted to be a function of many variables including the nature of the contaminants, the number of cells etc. The residence time is noted to be between 1 and 60 minutes is adequate to clarify the water. The Examiner asserts that this range would encompass applicant's range of 2.0-2.5 minutes and as it is applicable to the primary references would direct one to operate in the range as recited in the claims, and thus presumably claim 16 is obvious from this combination of references.

Once more the Applicants must respectfully traverse. To support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker, id.*

As established in the discussion of the above references, the claimed invention, as amended, is not anticipated by nor obvious from either Cairo '457 or Canzoneri '789 taken alone or together. The Applicants further respectfully submit that Brown '203 does not supply, teach, suggest or hint the deficiency of the primary references with respect to claim 16. Claim 16, by virtue of its dependency on amended independent claim 9, requires "intermittently raising the liquid level and collecting suspended matter in the primary skim collection channel *in response to*

the movement of the vessel” (emphasis added). As established above, neither Cairo ‘457 nor Canzoneri ‘789 teach or suggest or hint at this required feature. The Applicants respectfully submit that Brown ‘203 also does not supply or suggest this requirement. Brown ‘203 also will not and is not capable of handling the wave movement of a sudden, surging and/or unpredictable ocean, *e.g.* “pitch and roll”. Brown ‘203 also has a default fixed liquid level that would spill water undesirably into trough-like portions **240** in the event of sudden and quick movement of shell **200**. Thus, the Applicants must respectfully submit that the combination of either Cairo ‘457 or Canzoneri ‘789 cannot and does not teach or suggest the invention of claim 16 therein.

Because a *prima facie* obviousness rejection has not been made, the Applicants respectfully submit that the instant rejection should be withdrawn. Reconsideration is respectfully requested.

It is respectfully submitted that the enclosed terminal disclaimer, and the amendments and arguments presented above overcome the rejection. Reconsideration and allowance of the claims are respectfully requested. The Examiner is respectfully reminded of his continuing duty to indicate allowable subject matter. The Examiner is invited to call the Applicants’ attorney at the number below for any reason, especially any reason that may help advance the prosecution.

Respectfully submitted,
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